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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/799,810

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EXAMINER

FIGUEROA, JOHN J

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/799,810 | Applicant(s) SHUMWAY ET AL. | |
| | Examiner John J. Figueroa | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 and 63-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 and 63-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/27/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. Receipt is acknowledged of a request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e) and a submission (amendment), filed on March 27, 2008. The request has been deemed proper and this application has been hereby examined in view of said amendment.

Response to Amendment

2. The 35 U.S.C. 103(a) rejection of claims 1-9, 11-41, 63, 65 and 66 as unpatentable over United States Patent Number (USPN) 5,990,050 to Patel et al., (hereinafter 'Patel') in view of "Amphiphilic Copolymers", Langmuir 1998, 14, 5977-79, (hereinafter 'Perrin') has been maintained for reasons previously made of record in item 1 on page 2 of the Office Action mailed December 27, 2007, hereinafter 'FOA'.

3. The 35 U.S.C. 103(a) rejection of claims 10 and 64 as unpatentable over Patel in view of Perrin (as applied above to independent claims 1, 29 and 63) and further in view of "Crude Oil Emulsions: A State of the Art Review", SPE 77497, hereinafter 'Kokal' has been maintained for reasons previously made of record in item 2 on page 2 of FOA.

Specification

4. The use of trademarks, such as ALCOSPERSE® 747 and ALCOQUEST® 747, has been noted in this application. (See, page 10 of the present specification) It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-41 and 63-66 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for certain species of solid emulsifying particles (such as the modified silicas and metal sulfates disclosed in paragraphs [0026] and [0027] on pages 9 and 10, respectively, of the specification), does not reasonably provide enablement for every type of organic or polymer/resin particles, such as, e.g., the "organically modified polymer" or "polymer or combination of polymer" recited in claims 21 and 22, respectively. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The present specification does provide sufficient guidance to practice the claimed method using certain emulsion facilitating particles, such as the aforementioned modified silicas and metal sulfates. However, it does not provide sufficient guidance to practice the claimed invention to determine, without undue experimentation, which solid particles would be "emulsion facilitating" from, e.g., the numerous possible polymers, combination of polymers, and "organic modified" materials known to man under the sun as recited in claims 21 and 22. Due to the lack of sufficient specificity from the present specification (and claims) to be able to determine which solid particles would be "emulsion facilitating" and thereby suitable to perform the present method of treating a subterranean formation, without going beyond routine experimentation, the instant claims are accordingly not enabled by the present specification. See, *In re Wands*, 858 F.2d 731, 737, 8 USPQ 2d 1400, 1404 (Fed. Cir. 1998); MPEP 706.03(c) and 2164.01(a).

Claim Rejections - 35 USC § 102

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-9, 11-41, 63, 65 and 66 are rejected under 35 U.S.C. 102(b) as being unpatentable over Patel and Perrin, as further *evidenced by* USPN 4,727,097 to Kobayashi et al., USPN 4,735,987 to Morita et al.; USPN 4,806,578 to Kobayashi et al., USPN 4,826,680 to Lesniak et al., USPN 6,107,358 A to Harada et al., and Japanese Abstract to JP 360179485 A to Miyayama et al. [Examiner notes that these references

were cited in a previous Office Action and are relied upon only as evidence of what is commonly known in the art and not as grounds for the instant rejection.]

Patel discloses a drilling/working fluid, to be use in a subterranean formation, having an invert emulsion fluid that includes an oleaginous fluid (continuous phase) having an oil and an oil-soluble glycol ether that can be miscible in oil but only 10% miscible in water, a non-oleaginous fluid, and an emulsifier to stabilize the invert emulsion. (Abstract; col. 2, lines 17-42; col. 3, lines 12-21; col. 4, lines 8-24; col. 12, lines 2-65; col. 13, line 1 to col. 14, line 14) Patel discloses that the non-oleaginous fluid can be deionized water, fresh water, seawater and/or organic/inorganic brines and that it is present in an amount of from about 1 to 70% by volume of the total invert-emulsion volume. (Col. 4, lines 24-40)

Patel discloses the drilling fluid to further contain wetting agents or emulsifiers, such as crude tall oil, oxidized crude tall oil, alkyl aromatic sulfates and sulfonates; organophilic clay; an oil-soluble polymer or a polyamide resin as a viscosifier; weighting agents; fluid loss control agents; and corrosion inhibitors, such as silicates. (Col. 5, lines 1-15 and 22-63) Patel lists a series of emulsifiers (e.g. VERSACOAT®) followed by an alternate, separate list of surfactants, which can be instead used to produce or stabilize the invert-emulsion. Thus, Patel does not *require* that the invert-emulsion contain a surfactant. (Col. 5, lines 15-22; *See, e.g.*, Example 1, wherein Patel discloses an example of the emulsion containing a glycol ether, organophilic clay, VERSACOAT® emulsifier, a silicone emulsifier, lime, barite and a calcium chloride brine)

However, Patel does not disclose the emulsifier to be a *solid*, polymeric emulsifier nor does Patel disclose the particle size of the emulsifier.

Perrin teaches the use of a non-toxic, polymeric emulsifier to produce a rapid formation of a crystalline array of micrometer oil cells surrounded by a thin layer of aqueous polymer solution using a simple shear in-situ emulsification procedure. (Abstract).

Perrin also teaches the polymeric emulsifier to be a hydrophobically-modified poly(sodium acrylate) having hydrophobic alkyl chains grafted onto a negatively charged backbone (solid) and that its molecular weight of 50,000 g/mol. The amount of polymer required to stabilize the emulsion is 4% by volume and the cells produced by the emulsion have a diameter of 3 μ m. (Pages 5977-78)

Perrin further teaches that using the amphiphilic polymer to form the emulsion provides for a more uniform monodisperse emulsion having enhanced stability due to, *inter alia*, their exceptional resistance to film breaking. (Pages 5978-79)

Perrin teaches the polymeric emulsifier to be a hydrophobically-modified poly(sodium acrylate) having hydrophobic alkyl chains grafted onto a negatively charged backbone having a molecular weight of 50,000 g/mol. It is well known that polysodium acrylate (PSA), and grafted and/or crosslinked polymers thereof, *are water-swellaable, solid, resin* materials commonly used as water-absorbents in various applications. (See, e.g., USPN 4,727,097 to Kobayashi et al., col. 2, lines 16-47 disclosing grafted PSA polymers as highly water-absorptive resins; USPN 4,735,987 to Morita et al., col. 1, lines 17-41, teaching polysodium acrylate polymers as

advantageous *water-absorbent resin polymers*; USPN 4,806,578 to Kobayashi et al., col. 2, line 43 to col. 3, line 14, disclosing PSA and grafted starch-PSA polymers as hydrophilic *water-absorptive resin* agents; USPN 4,826,680 to Lesniak et al., col. 3, lines 19-52; claims 5, 9, 18 and 22, teaching crosslinked PSA polymers as effective *water-insoluble, water-swellaable resin materials*; USPN 6,107,358 A to Harada et al., col. 1, lines 23-35, teaching cross-linked PSA as a typical example of a *water-absorbent resin*; and the Japanese Abstract to JP 360179485 A to Miyayama et al., disclosing a graft of starch with PSA as a high-molecular, *water-swellaable* material for “waterstopping”). Consequently, because PSA and grafts thereof are known as *water-insoluble, water-swellaable* absorbent resin materials, they must be **solid** particles in *at least* the aqueous phase in Patel’s invert emulsion (or in the presently claimed fluid).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time that the invention was made, to use Perrin’s solid amphiphilic polymer as the emulsifier in the invert-emulsion used in Patel’s method of drilling/treating a subterranean formation. It would have been obvious to one skilled in the art to use said amphiphilic polymer in Patel’s drilling fluid in order to incorporate Perrin’s teachings and attain a more uniform and stable emulsion and, thus, a more efficient and cost-effective method of drilling/treating a formation.

Although Patel does not specifically disclose contact angles for the various emulsion phases (claims 14-17), because the emulsion disclosed by Patel and that encompassed by the instant claims are the same, then both emulsions must inherently possess the same physical properties, such as contact angle.

9. Claims 10 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel in view of Perrin (as applied above to independent claims 1, 29 and 63) and further in view of "Crude Oil Emulsions: A State of the Art Review", SPE 77497, hereinafter 'Kokal'.

Patel and Perrin were discussed above. Patel and Perrin do not expressly teach adding a breaker to the drilling fluid.

However, Kokal teaches that demulsification is the separation of an emulsion into its component phases to usually provide an aqueous component and an oil-phase component containing the desired hydrocarbon oil. (Page 5) Kokal further teaches that chemical demulsification ("breaking" by adding chemical demulsifiers) is the most common method of emulsion treatment. (Page 6-7)

Accordingly, it would have been obvious to a person of ordinary skill in the art, at the time that the invention was made, to include a breaker step in Patel and Perrin's method of drilling/treating a subterranean formation comprising subsequently adding a chemical demulsifier to the invert-emulsion. It would have been obvious to one skilled in the art to do so to be able to effectively attain/produce crude oil, with lower amount of water contamination, as taught by Kokal.

Response to Arguments

The 35 U.S.C. 103 Rejection over Patel and Perrin (item 1 of FOA)

10. Applicant's arguments in the response to OA filed October 5, 2007 (hereinafter 'Response) with respect to the 35 U.S.C. 103(a) rejection of claims 1-9, 11-41, 63, 65 and 66 as unpatentable over Patel in view of Perrin have been fully considered but deemed unpersuasive.

Applicant's argument concerning Perrin not expressly teaching the emulsion facilitating particle to be "solid" was addressed above in the rejection as presented in the instant action.

In response to Applicant's arguments concerning Patel not disclosing the fluid contact angle of its emulsifying particles, as stated previously, because the prior art discloses a composition for treating a subterranean formation containing solid particles encompassed by the present claims, then both sets of solid particles should possess the same properties, such as fluid contact angle. Examiner notes that the reference submitted by Applicant regarding measuring fluid contact angles (in water) does not provide evidence demonstrating as to why the particles taught in the prior art are not "emulsion facilitating" and/or have the same fluid contact angle.

In response to Applicant's arguments regarding Patel not disclosing a surfactant-free composition, as stated above, Patel teaches that the composition can contain wetting agents or emulsifiers. Accordingly, the treating composition disclosed in Patel need not contain a surfactant. As discussed in the prior Office action, the surfactants disclosed in Patel are examples of a preferred embodiment. "Disclosed examples and

preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). Furthermore, it is unclear as to why the "emulsion facilitating particles" recited in the present claims would not be considered an "emulsifier" in context with Patel and in accordance with present claims

Thus, the instant claims remain unpatentable over Patel and Perrin.

The 35 U.S.C. 103 Rejection over Patel, Perrin and Kokal (item 2 of FOA)

4. Applicant's arguments with respect to these 35 U.S.C. 103(a) rejection of claims 10 and 64 as unpatentable over Patel in view of Perrin, and further in view of Kokal, have been fully considered but deemed unpersuasive.

Applicant did not provide any substantive arguments in Response traversing the instant rejection except to state that the instant claims depend from independent claims that are allegedly patentable over Patel and Perrin. However, Applicant's arguments concerning Patel and Perrin were addressed above and were found unpersuasive.

Thus, the instant claims remain unpatentable over Patel, Perrin and Kokal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Figueroa whose telephone number is (571) 272-8916. Examiner can normally be reached on Monday-Thursday 8:00-6:00pm.

Art Unit: 1796

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, please contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJF/RAG

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796